

FLIGHT SUMMARY REPORT

Flight Number: 97-003-01
Calendar/Julian Date: 15 February 1997 • 046
Sensor Package: Wild-Heerbrugg RC-30
Thermal Infrared Multispectral
Scanner (TIMS)
Area(s) Covered: Trinity River, TX

Investigator(s): Hagenbuck, USFWS

Aircraft #: 799
Department of Energy
Cessna Citation

SENSOR DATA

Accession #:	05163	----
Sensor ID #:	017	1268
Sensor Type:	RC-30	TIMS
Focal Length:	6" 152.75 mm	----
Film Type:	Aerochrome IR SO-060	----
Filtration:	Wratten 12 + 2.2 AV	----
Spectral Band:	510-900 nm	----
f Stop:	Variable	----
Shutter Speed:	Variable	----
# of Frames:	245	----
% Overlap:	50	----
Quality:	Excellent	----
Remarks:		

Airborne Science and Applications Program

The Airborne Science Branch at NASA's Dryden Flight Research Center, Edwards, California, operates two ER-2 high altitude aircraft in support of NASA earth science research. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and in situ data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

Department of Energy Remote Sensing Laboratory

The NASA Airborne Science and Applications Program at Ames Research Center contracted with the Department of Energy Remote Sensing Laboratory (RSL) in Las Vegas, Nevada to fly the RSL Multispectral Scanner (MSS) and the NASA Thermal Infrared Multispectral Scanner (TIMS) over the desert southwest. The scanners were flown on the DOE Cessna Citation.

The Cessna Citation is a low and medium altitude, moderate speed aircraft. It can operate from 4,000 to 35,000 feet above sea level at speeds between 135 and 225 knots. There are two instrument ports in the aircraft. The RSL 1268 Multispectral Scanner was mounted over the aft port and the NASA Thermal Infrared Multispectral Scanner was mounted over the forward port.

Thermal Infrared Multispectral Scanner

The Thermal Infrared Multispectral Scanner (TIMS) is a multispectral scanning system using a dispersive grating and a six element mercury cadmium telluride detector array to produce six discrete channels in the 8.2 *mm* to 12.2 *mm* region.

<u>Channel</u>	<u>Wavelength, <i>mm</i></u>	<u>NET</u>
1	8.2 - 8.6	< 0.3° C
2	8.6 - 9.0	< 0.3° C
3	9.0 - 9.4	< 0.3° C
4	9.4 - 10.2	< 0.3° C
5	10.2 - 11.2	< 0.3° C
6	11.2 - 12.2	< 0.3° C

Sensor/aircraft parameters are as follows:

IFOV:	2.5 mrad
Ground Resolution:	163 feet (50 meters) at 65,000 feet
Total Scan Angle:	76.56°
Swath Width:	16.9 nmi (31.3 km) at 65,000 feet
Pixels/Scan Line:	638
Scan Rate:	7.3 (scans/second)
Ground Speed:	400 kts. (206 m/second)

Camera Systems

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrugg RC-10/RC-30 metric mapping camera
 - 9 x 9 inch film format
 - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
 - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet
- Hycon HR-732 large scale mapping camera
 - 9 x 18 inch film format
 - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet
- IRIS II Panoramic camera
 - 4.5 x 34.7 inch film format
 - 24 inch focal length lens
 - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for NASA-Ames aircraft acquired photographic and digital imagery. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

Information regarding ER-2 acquired photographic and digital data is available through the Aircraft Data Facility at Ames Research Center. For specific information regarding flight documentation, sensor parameters, and areas of coverage contact the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 650-604-6252).

DoE DAEDALUS TMS FLIGHT DATA
FLIGHT NUMBER: 97-003-01

Site	Line	Run	Actual time (GMT) begin	Actual scanline end	Scan Altitude feet/meter	total Speed (rps)	total Good scanlines	total Interpolated scanlines	Repeated scanlines		
1.	724	1 092	02:35:50.0	02:42:22.0	137478 147239	26500/ 8077	25.00	9762	0	0	
2.	724	1 027	02:47:14.0	02:54:19.0	154515 165110	26500/ 8077	25.00	10596	0	0	
3.	724	2 092	03:01:10.0	03:06:54.0	175345 183906	26500/ 8077	25.00	8562	0	0	
4.	726	1 180	04:01:12.0	04:07:34.0	265080 274595	25500/ 7772	25.00	9516			

CAMERA FLIGHT LINE DATA

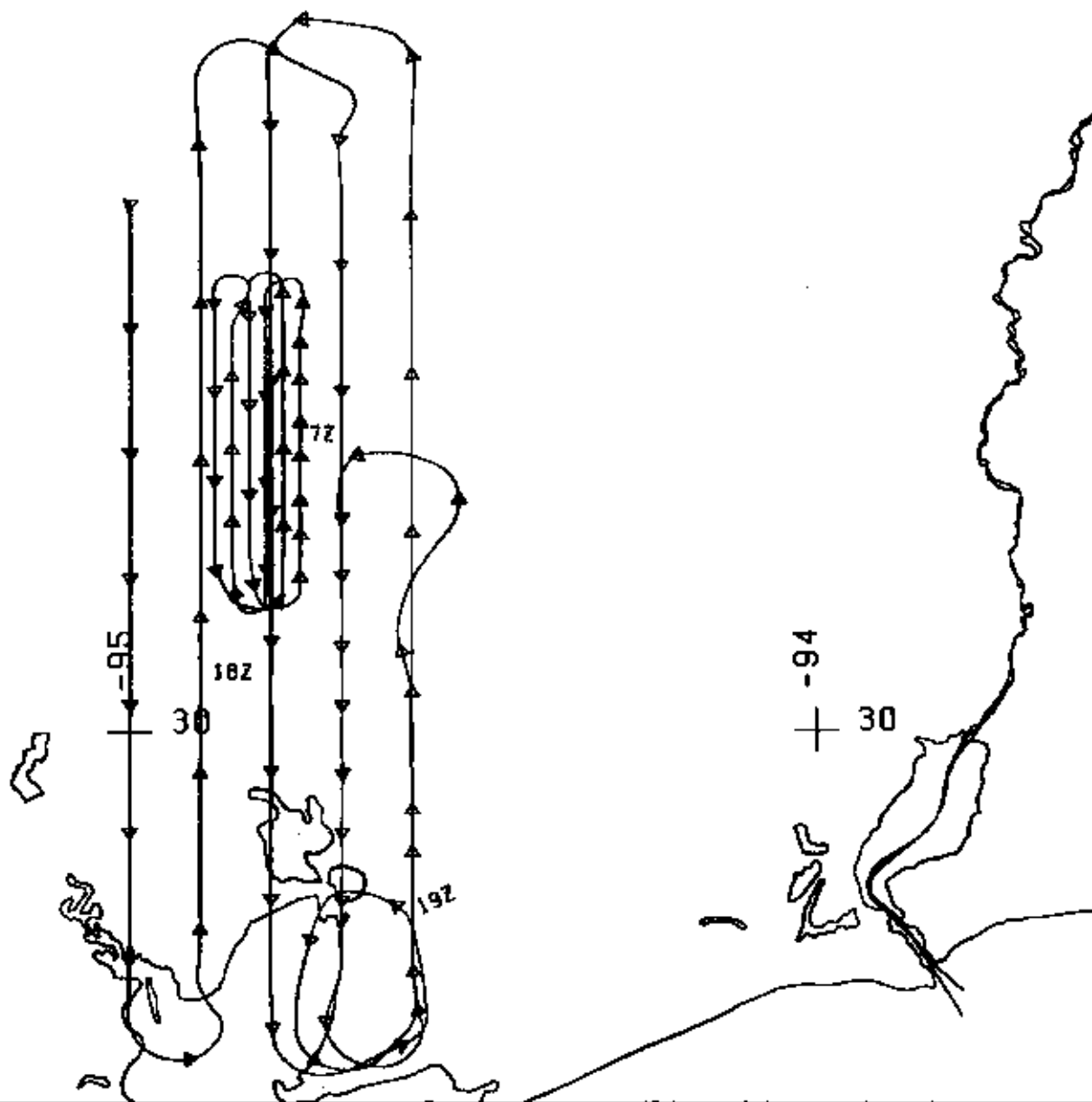
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Site #	Line #	Run #	Frame #	Time (GMT-hr, min, sec)		Altitude, MGL feet/meters	Cloud Cover/Remarks
				START	END		
701	6	1	0001-0020	16:22:03	16:27:06	7500/2286	Clear
701	4	1	0021-0040	16:30:38	16:35:11	7500/2286	Clear
701	2	1	0041-0060	16:39:32	16:44:55	7500/2286	Clear
701	1	1	0061-0080	16:48:38	16:53:02	7500/2286	Clear
701	5	1	0081-0100	16:57:32	17:02:35	7500/2286	Clear
701	3	1	0101-0120	17:06:11	17:10:34	7500/2286	Clear
701	6	1	0121-0140	17:14:43	17:19:42	7500/2286	Clear
701	7	1	0141-0159	17:40:57	17:52:22	31500/9601	Clear
701	8	1	0160-0178	17:56:48	18:05:59	31500/9601	Clear
701	10	1	0179-0196	18:11:43	18:23:03	31500/9601	Minor-10% cumulus (frames 0193-0196)
701	11	1	0197-0216	18:27:36	18:37:05	31500/9601	Minor-10% cumulus (frames 0197-0204)

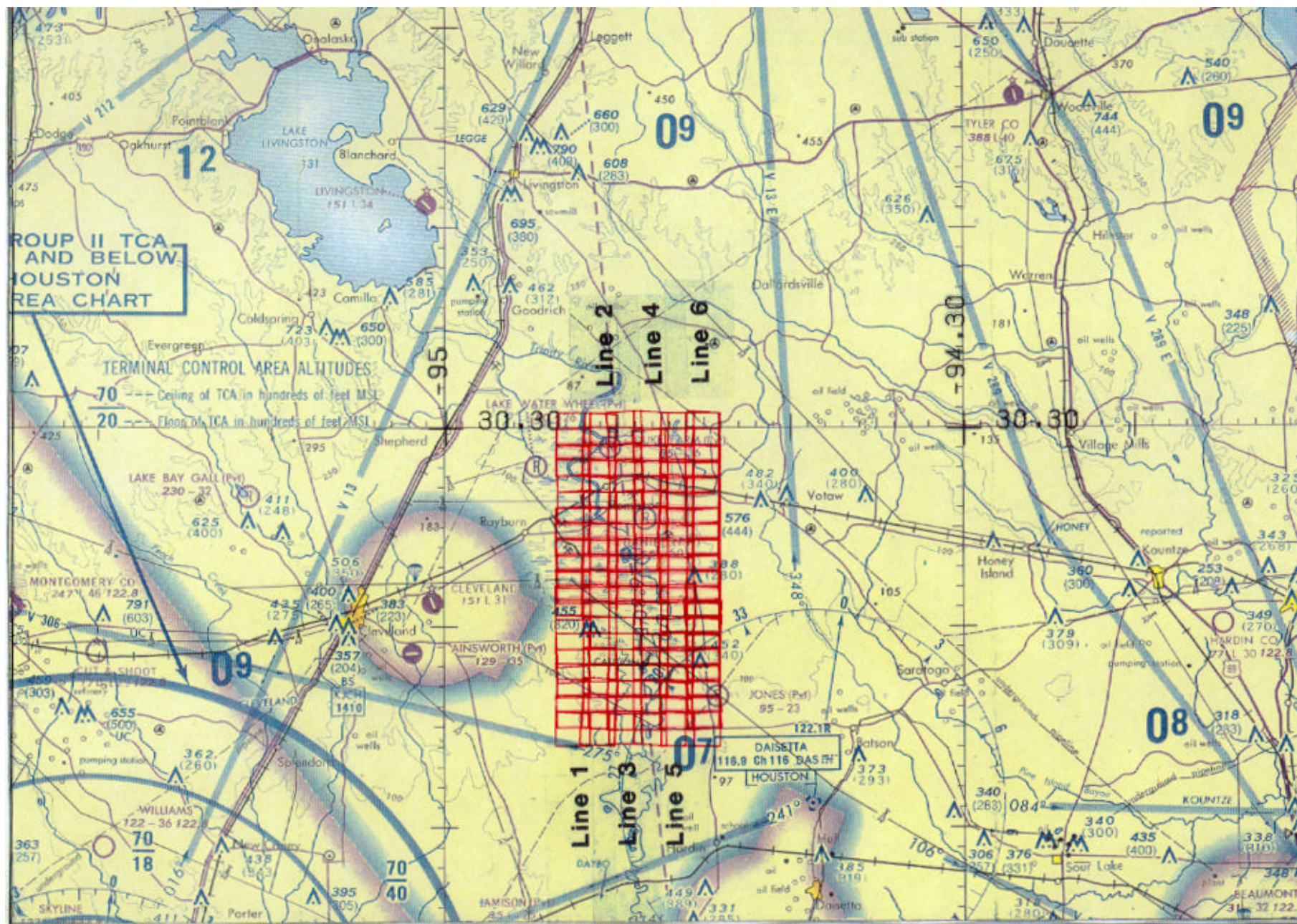


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A/C 799 (DOE)

RC-30 / TNB



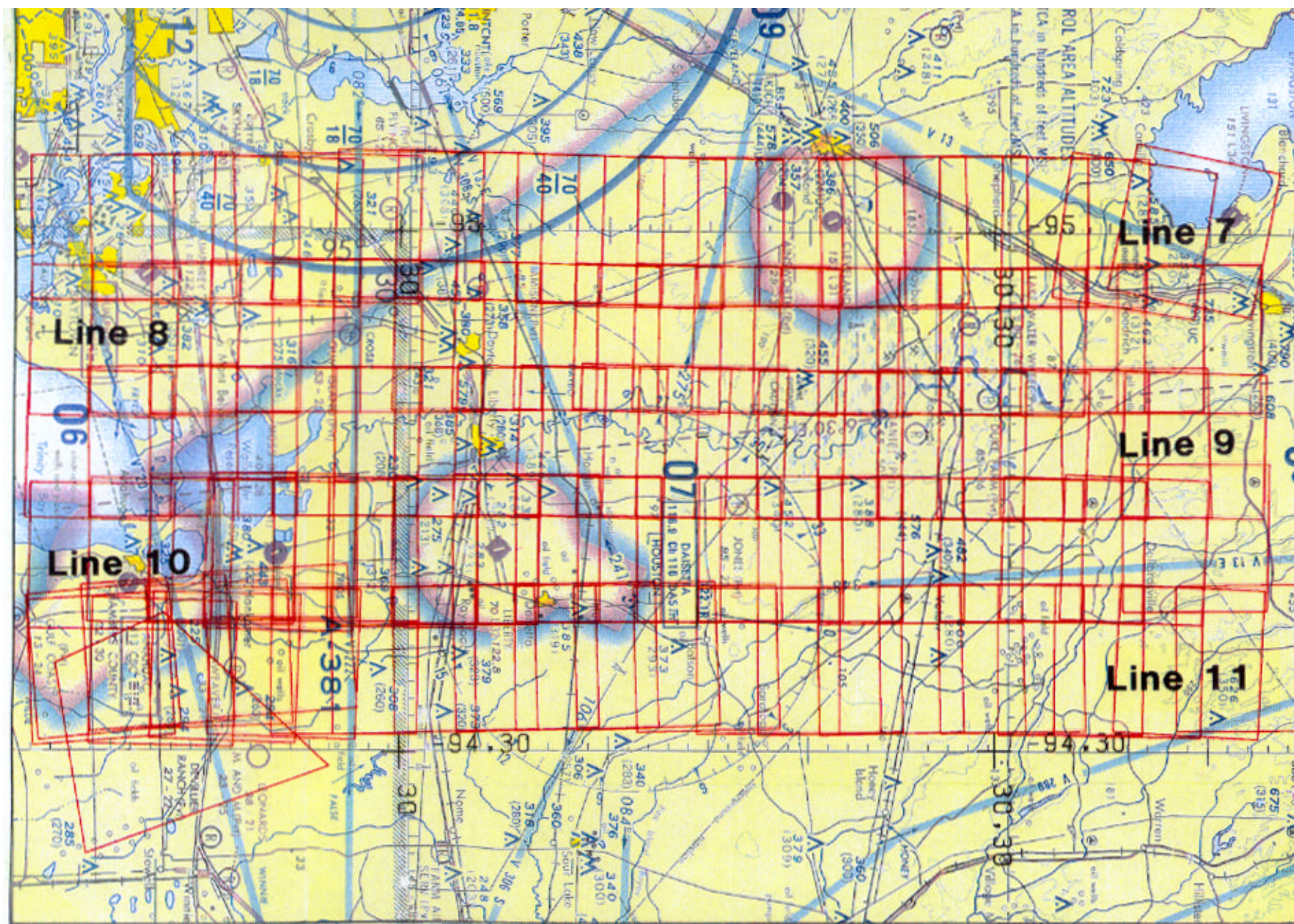
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HOUSTON SECTIONAL



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